

## REMARKS

Claims 26-29, 31-42 and 44-47 are pending in the subject application. Applicant has amended claim 26, canceled claim 30 and added new claims 44-47. Support for new claims 44-47 can be found, for example, with reference to paragraphs [0035-0036] of the present application. No new matter has been added to the application by virtue of the present amendment.

### **Claim Rejections – 35 U.S.C. 112, first and second paragraphs**

The Examiner has rejected claim 33 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, and claim 30 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Regarding claim 33, Applicant respectfully submits that support for claim 33 is provided, for example, with reference to FIG. 2 and paragraphs [0040-0041] of the present application. FIG. 2 shows a cathode comprising a first doped region 14 and a second doped region 12, and a **third doped region 12A** between the first doped region 14 and the second doped region 12.

Regarding claim 30, Applicant has canceled claim 30.

Therefore, Applicant believes the rejection of claim 33 under 35 U.S.C. 112, first paragraph, and the rejection of claim 30 under 35 U.S.C. 112, second paragraph, have been overcome.

### **Claim Rejections – 35 U.S.C. 102 (b)**

The Examiner has rejected claims 26-27, 29-30 and 39-41 under 35 U.S.C. 102(b) as being anticipated by Xu (U.S. Patent No. 6,437,383).

Applicant has amended independent claim 26 to recite the limitations of “...forming a plurality of isolation structures in said original substrate, each of said plurality of isolation structures disposed between at least a portion of said anode and respective said adjacent ones of said plurality of isolation regions, said plurality of isolation structures extend to a depth less than said cathode.” Support for Applicant’s amendment can be found, for example, referring to FIG. 1 (and related text) of the present application which discloses forming isolation structures 18, 18A (e.g. shallow trench isolation) in original substrate 10, each of the isolation structures 18, 18A are **disposed between** at least a portion of anode 20 **and** respective adjacent isolation regions 16 (e.g. deep trench isolation) (emphasis added).

Regarding new claims 44-47, Applicant’s claimed invention relates to forming a diode using process steps which are also used to form a transistor (e.g. FET or bipolar) on another region of the substrate. Thus, process complexity and costs to form the diode according to the present invention is reduced.

Applicant respectfully submits that Xu does not disclose, teach or suggest Applicant’s claim 26, as amended, and claims dependent thereupon. Referring to FIGS. 12-18 of Xu, Xu discloses STI structures 130, STI structures 132 and anode 160. STI structures 130, 132 are formed **orthogonal** to each other (see FIGS. 12 and 13 of Xu), thus, the STI structures 132 are **not** formed disposed between anode 160 and STI structures 130 as claimed by Applicant. In order to anticipate or suggest Applicant’s claimed invention, the STI structures 130, 132 of Xu would have to be formed parallel to each other and Xu is silent on forming any of the STI structures 130, 132 parallel to each other. Rather, Xu discloses that the STI structures are formed orthogonal to each other in order to define the size of the memory cell. The cross-sectional and perspective views shown in FIGS. 7-10 and 12-18 show the orthogonal positioning of the STI structures 130, 132. Xu is silent on any of the STI structures 132 oriented parallel to any one of the STI structures 130 and disposed between anode 160 and the STI structure 130.

Therefore, Applicant believes the rejections to the claims under 35 U.S.C. 102(b) have been overcome.

### **Claim Rejections – 35 U.S.C. 103 (a)**

The Examiner has rejected claims 31-32 and 42 under 35 U.S.C. 103(a) as being unpatentable over Xu; claims 28, 33, 35, 37-38 under 35 U.S.C. 103(a) as being unpatentable over Xu in view of Chen et al. (U.S. Patent No. 6,242,763); claims 34 and 36 under 35 U.S.C. 103(a) as being unpatentable over Xu and Chen, as applied to claims 33 and 35 above, and further in view of Robinson et al. (U.S. Patent No. 5,268,316).

Applicant has amended independent claim 26. Applicant respectfully submits that Xu, individually or in combination with Chen or Robinson et al., does not teach or suggest Applicant's claim 26, as amended, or claims dependent thereupon.

For reasons discussed hereinabove regarding Xu, Applicant respectfully submits that Chen or Robinson fail to remedy the deficiencies in Xu. Both Chen and Robinson are silent on disclosing Applicant's limitation of "... forming a plurality of isolation structures in said original substrate, each of said plurality of isolation structures disposed between at least a portion of said anode and respective said adjacent ones of said plurality of isolation regions, said plurality of isolation structures extend to a depth less than said cathode."

Therefore, Applicant believes the rejections to the claims under 35 U.S.C. 103(a) have been overcome.

## CONCLUSION

In light of the foregoing amendments and remarks, all of the claims now presented are believed to be in condition for allowance, and Applicant respectfully requests that the outstanding rejections be withdrawn and this application be passed to issue at an early date.

The Examiner is urged to call the undersigned at the number listed below if, in the Examiner's opinion, such a phone conference would aid in furthering the prosecution of this application. Please charge Applicant's Deposit Account, 09-0456, for a one month extension of time fee which is due by virtue of this amendment. If any other extensions or fees are not accounted for, such extension is requested and the associated fee should be charged to our deposit account.

Respectfully Submitted,

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